

The Status of Water Quality in Arizona – 2004

Arizona's Integrated 305(b) Assessment and 303(d) Listing Report

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I. Arizona's 2004 Integrated Assessment and Listing Process

Why do we write this report?

This biennial report consolidates reporting requirements under the federal Clean Water Act sections 305(b) (assessments), 303(d) (impaired waters list), 106 (monitoring), 204 (grants), 319 (nonpoint source), and 314 (lakes program). It incorporates recommendations made in the U.S. Environmental Protection Agency's (EPA) "Guidance for 2004 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act" issued in July 2003. This report also provides information required in Arizona's TMDL statute (Arizona Revised Statute 49-231 through 49-238) and *Impaired Water Identification* rule (Arizona Administrative Code R11-18-601 through 606).

In addition, the Arizona Department of Environmental Quality (ADEQ) recognizes that this report can provide many state and federal agencies, organizations, and interested parties with a current reference document on the status of surface and ground water quality in Arizona. The following objectives are fulfilled by the publication of this water quality assessment report:

- Report on statewide surface and ground water quality in Arizona (excluding tribal lands);
- Identify and delineate all assessed surface waters;
- Identify the status of designated use support for individual surface waters based on numeric or narrative water quality standards;
- Document the basis for ground water and surface water assessment determinations;
- Identify pollutants or water quality characteristics that cause impairment;
- Identify possible sources of pollutants;
- Indicate where standards are exceeded solely due to natural conditions;
- Describe the state's monitoring program and progress toward achieving comprehensive assessments for all surface waters;
- Identify where additional monitoring may be needed to complete assessments (Planning List) or support the development of Total Maximum Daily Load (TMDL) analyses, including a schedule for this monitoring;
- Identify and prioritize where additional TMDLs need to be completed;
- Provide opportunity for public review and respond to comments concerning assessments and the state's 303(d) listing proposals;

This report was written to be understandable for both technical and nontechnical

audiences. Technical terms, acronyms, and abbreviations used in this document are defined in **Appendix A**.

State Statutes and the *Impaired Water Identification* Rule

The 2002 Integrated Assessment and Listing Report marked a significant change in Arizona's assessment and listing processes, due to new state statutes and regulations adopted in 2000. These statutes and rules regulate the identification of impaired waters and the

prioritization and completion of Total Maximum Daily Load (TMDL) analyses. Arizona continues to implement these requirements, described below, in the 2004 report.

State Statutes -- Arizona Revised Statute Title 49, sections 231-238 (**Appendix B**), established procedures for identifying impaired waters which require TMDL analyses. For 303(d) listing decisions, the statute requires that ADEQ:

- Adopt, by rule, the methods used to identify "impaired" waters;
- Use only reasonably current, credible, and scientifically defensible data;
- Consider the nature of the water (e.g., ephemeral, intermittent, or perennial) in assessing whether a surface water is impaired;
- Determine whether pollutant loadings solely from naturally occurring conditions are sufficient to exceed a water quality standard, and if so, not list as "impaired";
- Adopt narrative implementation procedures through a public process before using narrative standards to identify impaired waters. These procedures must identify the objective basis for determining a narrative or biological standard violation.

A Total Maximum Daily Load Analysis (TMDL)

A TMDL is a written, quantitative plan and analysis to determine the maximum loading on a pollutant basis that a surface water can assimilate and still attain and maintain a specific water quality standard during all conditions. The TMDL allocates the loading capacity of the surface water to point sources and nonpoint sources identified in the watershed, accounting for natural background levels and seasonal variation, with an allocation set aside as a margin of safety.

Impaired Water Identification Rule -- ADEQ developed the *Impaired Water Identification* rule (R18-11-601 through R18-11-606) (**Appendix B**) as required in the state statute discussed above. These rules establish the following:

- < “Credible data” criteria;
- < Data submission and record keeping;
- < General data interpretation requirements;
- < Criteria for placing a surface water on the Planning List for further monitoring;
- < Criteria for identifying a surface water as impaired and placing it and identified pollutants on the 303(d) List;
- < Criteria for removing a pollutant or surface water from the 303(d) List; and
- < Criteria for prioritizing the 303(d) listed waters for TMDL development.

Although the *Impaired Water Identification* rule regulates the listing of waters only, and does not set requirements on those waters not placed on the 303(d) List or Planning List, ADEQ has chosen to apply the same data interpretation criteria to all waters to maintain consistency of methods. Data which does not meet the “credible data requirements” will not be used to make any assessment, be it “attaining” or “impaired.” All data collected by or submitted to ADEQ will be considered and noted in the monitoring tables, but will not be used to make an assessment if credible data requirements are not fulfilled.

Federal guidance and regulations

New Federal Guidance – In July 2003, EPA issued “Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act” concerning the development and submission of the 2004 305(b) water quality report and the 303(d) List of impaired waters. This guidance recommended, as it did for the 2002 assessment, that states submit an integrated water quality assessment report that included the state’s 303(d) listed waters. **Table 1** indicates the information EPA requested, and where this information can be found in this report.

Table 1. EPA Requested Data or Information

Data or Information Requested	Data or Information Provided in This Report
Geographic delineations of each surface water assessed based on the new National Hydrography Dataset.	Arizona will be sending EPA the geographic delineations requested.
Status of and progress toward achieving comprehensive assessments of all waters.	Chapter VI provides an overview of surface water quality assessments and Chapter VII provides an overview of ground water quality assessments. ADEQ’s monitoring programs are described in Chapter VIII.
Water quality standard attainment determinations for each surface water assessed.	Detailed monitoring information for each surface water assessed is provided in Chapter IV. Information is arranged by watershed. These tables clearly indicate the basis for each assessment.
Identify additional monitoring that may be needed to determine water quality standard attainment status and, if necessary, to support development of TMDLs.	The assessment tables in Chapter IV and the 5-category lists in Chapter V indicate whether a surface water will be on the Planning List or TMDL list and the pollutant(s) of concern. Monitoring activities are being developed based on this information.
Schedules for additional monitoring planned for each surface water assessed.	Chapter VIII describes ADEQ’s monitoring programs, how these programs are integrated within the agency and with other agencies, and how waters are scheduled through a 5-year watershed monitoring cycle.
Surface waters and pollutants still requiring TMDLs.	Impaired waters which require TMDLs and their pollutants of concern are identified in the Category 5 list in Chapter V.
TMDL development schedules reflecting the priority ranking of each surface water and/or pollutant combination.	A priority ranking and a schedule for completing TMDLs for each pollutant impairing a surface water is provided in Chapter V.
A description of the assessment and listing methodology used to develop Clean Water Act section 303(d) Lists and section 305(b) Assessments.	Chapter III describes the assessment and listing methods used. Appendix B provides a copy of the <i>Impaired Waters Identification</i> rule and Arizona’s statute concerning the listing process and TMDL development.
A description of the public participation process involved in developing the 303(d) list.	The public participation process is described later in this chapter.

EPA guidance suggests that surface waters be placed on the following five-part list of surface waters depending on the sufficiency of data and number of exceedances as defined in Arizona's assessment and listing methods (see discussion in Chapter III):

- Category 1. Surface waters where all designated uses are being attained.
- Category 2. Surface waters are attaining some designated uses but there are insufficient data to assess the remaining uses. Arizona has chosen to place surface waters assessed as "threatened" in this category as well.
- Category 3. Surface waters with insufficient data to assess any designated use.
- Category 4. Surface waters are assessed as "not attaining" one or more designated use but a Total Maximum Daily Load (TMDL) analysis will not be required for one of the following reasons:
 - 4 A. A TMDL has already been completed and approved by EPA but the water quality standards are not yet being attained.
 - 4 B. Other pollution control requirements are reasonably expected to result in the attainment of water quality standards by the next regularly scheduled listing cycle.
 - 4 C. The impairment is not related to a "pollutant" loading but rather caused by "pollution" (e.g., hydrologic modification).
 - 4D. Arizona has developed this subcategory for surface waters that would be impaired under the former turbidity standard (repealed in 2002). See discussion in next section.
- Category 5. Surface waters are impaired for one or more designated uses by a pollutant and require development of a TMDL.

Note that EPA guidance suggests that waters assessed as "threatened" be placed in Category 5. Arizona will include "threatened" waters in Category 2 or 3 as "inconclusive" and in need of further monitoring until federal regulations clarify whether "threatened" waters must be included in the 303(d) List of impaired waters. Arizona is also waiting for EPA to establish clear methods for the trend analysis necessary to identify threatened waters (e.g. minimum number of samples needed to develop a trend). For this assessment, no waters were assessed as "threatened."

Federal Regulations -- Impaired water listing requirements are also established in federal regulations (40 Code of Federal Regulations parts 122, 124, and 130.7). These regulations were applied in this assessment.

Changes in the assessment process

Several major changes, summarized below, have been made to ADEQ's water quality assessment process since the last report in 2002.

Application of Chronic Standards -- ADEQ has developed a process for the use of chronic Aquatic and Wildlife water quality standards in the 2004 assessment. As assessments are not enforcement actions, the provisions in the Surface Water Standards to determine compliance with chronic aquatic and wildlife criteria (R18-11-120) were not applied. (Enforcement of a chronic standard violation requires that the geometric mean of the analytical results of the last four samples taken at least 24 hours apart exceed the standard.)

Acute and Chronic Standards

Some water quality parameters have both an "acute" and a "chronic" standard (**Appendix C**). Acute standards are generally higher than chronic standards and are developed to protect for short-term, high level exposures to the parameter of concern. Chronic standards are set lower than acute standards and are developed to protect for long-term, lower level exposure to a parameter.

Instead, a surface water is assessed as "impaired" based on a chronic water quality standard if 25% or more of the samples exceed the chronic standard when 10 or more samples have been collected. When there were fewer than 10 samples, a minimum of 3 exceedances of the chronic standards was sufficient for assessing the surface water as "impaired, because at 10 samples only 3 exceedances would cause a listing.

An exceedance rate of 11-14% when 10 or more samples, or 1 or 2 exceedances when less than 10 samples, will result in an assessment of "inconclusive" and place the surface water on the Planning List for further monitoring.

Turbidity and Suspended Sediment Concentration Standards -- ADEQ repealed its turbidity standard in March of 2002 and adopted a suspended sediment concentration (SSC) standard of 80 mg/L, expressed as a geometric mean with a four sample minimum, to protect Aquatic and Wildlife designated uses. The new SSC standard is only applicable to samples collected at or near base flow, which the U.S. Geological Survey (USGS) defines as "flow sustained largely by ground water discharge." Precipitation events and runoff must be excluded.

As established in Arizona's *Impaired Water Identification* rule (**Appendix B**), more than one exceedance of this geometric mean standard would result in an assessment of "impaired." One exceedance would be assessed as "inconclusive."

ADEQ encountered several obstacles in assessing using the new suspended sediment concentration standard, which are detailed further in Chapter III under "Turbidity and the New SSC Standard." The major difficulty was that ADEQ could not determine a scientifically-based method for determining base flow. Until a method of assessing SSC data is developed, ADEQ has taken the following steps to ensure that evidence of potential suspended sediment problems is not lost:

- Turbidity data have been included and assessed under the former standard. Any waters indicating impairment were assessed as "not attaining" and placed on the Planning List for further monitoring.
- Any sites indicating potential impairment based on the suspended sediment concentration standard were assessed as "inconclusive" and also placed on the Planning List for further monitoring.
- A table of lakes and streams potentially impaired due to suspended sediment or turbidity is included in Chapter VI along with a map showing their location in the state. These are the waters that will have high priority for further suspended sediment studies.

How is the assessment and listing approved?

The Arizona 2004 303(d) Submission to EPA – In accordance with Arizona Revised Statute (49-232.A), the proposed 303(d) List is submitted to EPA following public review and publication of the list and response to comments in the Arizona Administrative Register. The 303(d) List is due to EPA on April 1st of each even-numbered year. The 2004 Integrated Report will be available at ADEQ's web site in Adobe PDF format at: www.adeq.state.az.us.

The table showing Category 5 surface waters is the list of impaired waters that is submitted to EPA in April 2004. The list identifies, by surface water segment, the pollutants or surface water characteristics not meeting surface water quality standards. EPA must approve this list and has the authority to add or remove surface waters from the list based on the federal Clean Water Act, regulations, or policies. Therefore, the list shown in this report can be modified by EPA. If changes are made, ADEQ will then provide a revised list on its internet site: www.adeq.state.az.us.

Public Participation in Arizona's Listing Process – Communicating with the public and promoting public input into the 303(d) listing process is an integral component of ADEQ's water quality management programs. A 30-day public review of this draft report is provided in November 2003. A copy of the report is posted on ADEQ's web site, notices are placed in six local newspapers throughout the state (Phoenix, Tucson, Flagstaff, Sierra Vista, Yuma, and St. Johns), and flyers concerning the public review are mailed to a list of interested persons. Copies of the draft report are available on CD, in hard copy, or as an electronic download from the Internet.

Arizona's TMDL statute provides that any party who submits written comments on the draft list may challenge a surface water listing. Any challenged listing will not be included on the initial submission to EPA, but may be subsequently submitted if the listing is upheld in the director's final administrative decision.

The response to comments and the draft 303(d) List is published in the Arizona Administrative Register on **xxx, 2003**, according to Arizona Revised Statute 49-232. Publication of the list in the Arizona Administrative Register is an appealable agency action and may be appealed by any party that submitted written comments on the draft list. If a notice of appeal of a listing occurs within the 45-day publication period in the Arizona Administrative Register, ADEQ cannot include the challenged listing in its initial submission to EPA until the listing is upheld by ADEQ's Director or if the challenge is withdrawn.

EPA List Approval Process -- Within 30 days of receipt of a completed listing package, EPA must act on a state's list and priority ranking. EPA may approve or disapprove the entire list or disapprove only deficient portions.

If it disapproves a portion, EPA must within 30 days identify corrections (i.e., surface waters, pollutant(s), priority rankings) needed to make the list consistent with EPA regulations. EPA must also initiate another public review and comment period. The agency publishes its intended revisions in the *Federal Register*, newspaper notices, and other methods of notifying interested parties.

At the end of the comment period, EPA will evaluate public comments and compile a revised list. This corrected list is sent back to ADEQ to be incorporated into the water quality management plans and used as Arizona's approved 2004 303(d) List.

EPA Action on the Methods – Arizona’s *Impaired Water Identification* rule (**Appendix B**) establishes Arizona’s 303(d) listing procedures. EPA provided comments on the rule in 2002 when it was developed. Although EPA does not have authority to approve this rule, EPA considers the methods it establishes when it reviews the 303(d) List Arizona submits. As described above, EPA may cite any deficiencies it raised in comments as a factor in a decision to disapprove all or part of Arizona’s 303(d) List.

After EPA’s final action is taken, ADEQ will post the final 2004 303(d) List on its website. Copies of the 2002 303(d) List (the current list, until EPA approves the 2004 list) are downloadable from the ADEQ web site in Adobe PDF format at: www.adeq.state.az.us.